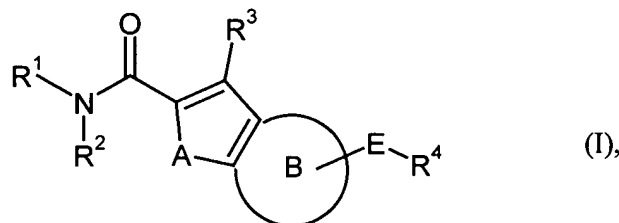


Amended Claims (Attorney Docket No. LeA 36 131)

1. (Currently amended) A compound ~~Compounds~~ of the formula



in which

- R^1 is 1-azabicyclo[2.2.2]oct-3-yl, which is optionally substituted via the nitrogen atom by a radical selected from the group of C_1 - C_4 -alkyl, benzyl and oxy,
- R^2 is hydrogen or C_1 - C_6 -alkyl,
- R^3 is hydrogen, halogen or C_1 - C_6 -alkyl,
- R^4 is hydrogen, halogen, cyano, amino, trifluoromethyl, trifluoromethoxy, C_1 - C_6 -alkyl, C_1 - C_6 -alkylcarbonyl, C_1 - C_6 -alkylamino, formyl, hydroxycarbonyl, C_1 - C_6 -alkoxy, C_1 - C_6 -alkoxycarbonyl, C_1 - C_6 -alkylthio, C_1 - C_6 -alkylcarbonylamino, C_1 - C_6 -alkylaminocarbonyl, C_1 - C_4 -alkylsulphonylamino, C_3 - C_8 -cycloalkylcarbonylamino, C_3 - C_6 -cycloalkylaminocarbonyl, pyrrolyl, C_1 - C_6 -alkylaminocarbonylamino, heterocyclylcarbonyl, heterocyclylcarbonylamino, heteroarylcarbonylamino, hydroxyl, phenyl or heterocyclyl,

where C_1 - C_6 -alkyl may optionally be substituted by hydroxyl, cyano, amino, C_1 - C_6 -alkylaminocarbonylamino, C_1 - C_6 -alkylaminocarboxyl, heterocyclyl or aryl, C_1 - C_6 -alkylaminocarbonyl may optionally be substituted by C_1 - C_6 -alkoxy or C_1 - C_6 -alkylamino, C_1 - C_6 -alkylcarbonylamino may optionally be substituted by C_1 - C_6 -alkoxy, and heterocyclyl may optionally be substituted by oxo,

- A is oxygen or sulphur,

the ring B is benzo or pyrido, each of which are optionally substituted by radicals from the series halogen, cyano, formyl, trifluoromethyl, trifluoromethoxy, nitro, amino, C₁-C₆-alkyl and C₁-C₆-alkoxy,

and

E is C≡C, arylene and heteroarylene, where arylene and heteroarylene may be substituted by radicals from the series halogen, cyano, trifluoromethyl, trifluoromethoxy, nitro, amino, C₁-C₆-alkoxy and C₁-C₆-alkyl,

and the solvates, salts or solvates of the salts of these compounds.

2. (Currently amended) A compound ~~Compounds~~ according to Claim 1, of the formula (I), in which

R¹ is 1-azabicyclo[2.2.2]oct-3-yl,

R² is hydrogen or C₁-C₄-alkyl,

R³ is hydrogen, fluorine, chlorine, bromine or C₁-C₄-alkyl,

R⁴ is hydrogen, fluorine, chlorine, bromine, cyano, amino, trifluoromethyl, trifluoromethoxy, C₁-C₄-alkyl, C₁-C₄-alkylcarbonyl, C₁-C₄-alkylamino, formyl, hydroxycarbonyl, C₁-C₄-alkoxy, C₁-C₄-alkoxycarbonyl, C₁-C₄-alkylthio, C₁-C₄-alkylcarbonylamino, C₁-C₄-alkylaminocarbonyl, C₁-C₄-alkylsulphonylamino, C₃-C₆-cycloalkylcarbonylamino, C₃-C₆-cycloalkylaminocarbonyl, pyrrolyl, C₁-C₄-alkylaminocarbonylamino, heterocyclylcarbonyl, heterocyclylcarbonylamino, heteroarylcarbonylamino, hydroxyl, phenyl or heterocyclyl,

where C₁-C₄-alkyl may optionally be substituted by hydroxyl, cyano, amino, C₁-C₄-alkylaminocarbonylamino, C₁-C₄-alkylaminocarboxyl, heterocyclyl or aryl, C₁-C₄-alkylaminocarbonyl may optionally be substituted by C₁-C₄-alkoxy or C₁-C₄-alkylamino,

C₁-C₄-alkylcarbonylamino may optionally be substituted by C₁-C₄-alkoxy, and heterocyclyl may optionally be substituted by oxo,

A is oxygen or sulphur,

the ring B is benzo or pyrido, each of which are optionally substituted by radicals from the series halogen, cyano, trifluoromethyl, trifluoromethoxy and C₁-C₄-alkyl,

and

E is C≡C, arylene and heteroarylene, where arylene and heteroarylene may be substituted by radicals from the series halogen, cyano, trifluoromethyl, trifluoromethoxy, nitro, amino, C₁-C₄-alkoxy and C₁-C₄-alkyl,

and the solvates, salts or solvates of the salts of these compounds.

3. (Currently amended) A compound ~~Compounds~~ according to Claims 1 ~~and 2~~, of the formula (I), in which

R¹ is 1-azabicyclo[2.2.2]oct-3-yl,

R² and R³ are hydrogen,

R⁴ is hydrogen, fluorine, chlorine, bromine, cyano, amino, trifluoromethyl, trifluoromethoxy, C₁-C₄-alkyl, C₁-C₄-alkylcarbonyl, C₁-C₄-alkylamino, formyl, hydroxycarbonyl, C₁-C₄-alkoxy, C₁-C₄-alkoxycarbonyl, C₁-C₆-alkylthio, C₁-C₄-alkylcarbonylamino, C₁-C₄-alkylaminocarbonyl, C₁-C₄-alkylsulphonylamino, C₃-C₆-cycloalkylcarbonylamino, C₃-C₆-cycloalkylaminocarbonyl, pyrrolyl, C₁-C₄-alkylaminocarbonylamino, heterocyclylcarbonyl, heterocyclylcarbonylamino, heteroarylcarbonylamino, hydroxyl, phenyl or heterocyclyl,

where C₁-C₄-alkyl may optionally be substituted by hydroxyl, cyano, amino, C₁-C₄-alkylaminocarbonylamino, C₁-C₄-alkylaminocarboxyl, heterocyclyl or aryl,

C₁-C₄-alkylaminocarbonyl may optionally be substituted by C₁-C₄-alkoxy or C₁-C₄-alkylamino,

C₁-C₄-alkylcarbonylamino may optionally be substituted by C₁-C₄-alkoxy, and heterocyclyl may optionally be substituted by oxo,

A is oxygen,

the ring B is benzo or pyrido, each of which are optionally substituted by radicals from the series halogen, cyano, trifluoromethyl, trifluoromethoxy and C₁-C₄-alkyl,

and

E is C≡C, arylene and heteroarylene, where arylene and heteroarylene may be substituted by radicals from the series halogen, cyano, trifluoromethyl, trifluoromethoxy, nitro, amino, C₁-C₄-alkoxy and C₁-C₄-alkyl,

and the solvates, salts or solvates of the salts of these compounds.

4. (Currently amended) A compound ~~Compounds~~ according to Claims 1 to 3, of the formula (I), in which

R¹ is 1-azabicyclo[2.2.2]oct-3-yl,

R² is hydrogen or C₁-C₆-alkyl,

R³ is hydrogen, halogen or C₁-C₆-alkyl,

R⁴ is hydrogen, halogen, cyano, amino, trifluoromethyl, trifluoromethoxy, C₁-C₆-alkyl, C₁-C₆-alkylcarbonyl, C₁-C₆-alkylamino, formyl, hydroxycarbonyl, C₁-C₆-alkoxy, C₁-C₆-alkoxycarbonyl, C₁-C₆-alkylthio, C₁-C₆-alkylcarbonylamino, C₁-C₄-alkylsulphonylamino, C₃-C₈-cycloalkylcarbonylamino, pyrrolyl, C₁-C₆-alkylaminocarbonylamino, heterocyclylcarbonyl, phenyl or heterocyclyl,

where C₁-C₆-alkyl may optionally be substituted by hydroxyl, amino, C₁-C₆-alkyl-aminocarbonylamino, C₁-C₆-alkylaminocarboxyl, heterocyclyl or aryl, C₁-C₆-alkylcarbonylamino may optionally be substituted by C₁-C₆-alkoxy, and heterocyclyl may optionally be substituted by oxo,

A is oxygen or sulphur,

the ring B is benzo or pyrido, each of which are optionally substituted by radicals from the series halogen, cyano, formyl, trifluoromethyl, trifluoromethoxy, nitro, amino, C₁-C₆-alkyl and C₁-C₆-alkoxy,

and

E is C≡C, arylene and heteroarylene, where arylene and heteroarylene are optionally substituted by radicals from the series halogen, cyano, trifluoromethyl, trifluoromethoxy, nitro, amino, C₁-C₆-alkoxy and C₁-C₆-alkyl,

and the solvates, salts or solvates of the salts of these compounds.

5. (Currently amended) A compound ~~Compounds~~ of the formula (I) according to Claims 1 to 4, in which

R¹ is 1-azabicyclo[2.2.2]oct-3-yl,

R² is hydrogen or C₁-C₆-alkyl,

R³ is hydrogen, halogen or C₁-C₆-alkyl,

R⁴ is hydrogen, halogen, cyano, trifluoromethyl, trifluoromethoxy, C₁-C₆-alkyl, C₁-C₆-alkoxy or heterocyclyl, where alkyl is optionally substituted by a hydroxyl radical,

A is oxygen or sulphur,

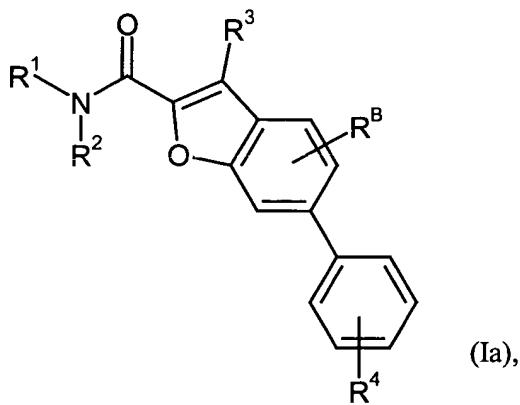
the ring B is benzo or pyrido, each of which are optionally substituted by radicals from the series halogen, cyano, trifluoromethyl, trifluoromethoxy, nitro, amino, C₁-C₆-alkyl and C₁-C₆-alkoxy,

and

E is C≡C, arylene or heteroarylene, where arylene and heteroarylene are optionally substituted by radicals from the series halogen, cyano, trifluoromethyl, trifluoromethoxy, nitro, amino, C₁-C₆-alkyl and C₁-C₆-alkoxy,

and the solvates, salts or solvates of the salts of these compounds.

6. (Currently amended) A compound ~~Compounds~~ according to Claims 1 to 5, of the formula



in which

R¹ is (3*R*)-1-azabicyclo[2.2.2]oct-3-yl,

R² and R³ are, independently of one another, hydrogen or methyl,

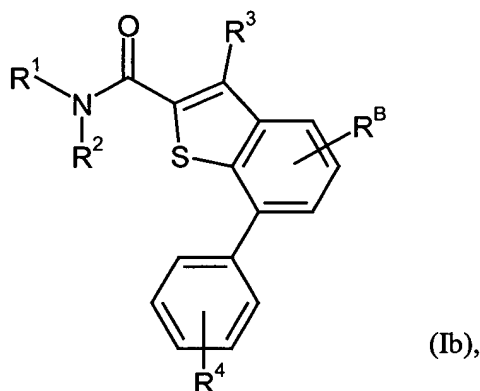
R⁴ is hydrogen, halogen, cyano, trifluoromethyl, trifluoromethoxy, C₁-C₆-alkyl, C₁-C₆-alkoxy or heterocyclyl, where alkyl is optionally substituted by a hydroxyl radical,

and

R^B is hydrogen, halogen, cyano, trifluoromethyl, trifluoromethoxy, nitro, amino, C_1 - C_6 -alkyl or C_1 - C_6 -alkoxy,

and the solvates, salts or solvates of the salts of these compounds.

7. (Currently amended) A compound ~~Compounds~~ according to Claims 1 ~~to 6~~, of the formula



in which

R^1 is (3*R*)-1-azabicyclo[2.2.2]oct-3-yl,

R^2 and R^3 are, independently of one another, hydrogen or methyl,

R^4 is hydrogen, halogen, cyano, trifluoromethyl, trifluoromethoxy, C_1 - C_6 -alkyl, C_1 - C_6 -alkoxy or heterocyclyl, where alkyl is optionally substituted by a hydroxyl radical, and

R^B is hydrogen, halogen, cyano, trifluoromethyl, trifluoromethoxy, nitro, amino, C_1 - C_6 -alkyl and C_1 - C_6 -alkoxy,

and the solvates, salts or solvates of the salts of these compounds.

8. (Currently amended) A compound ~~Compounds~~ according to Claims 1 to 7, where

R^1 is (3*R*)-1-azabicyclo[2.2.2]oct-3-yl,

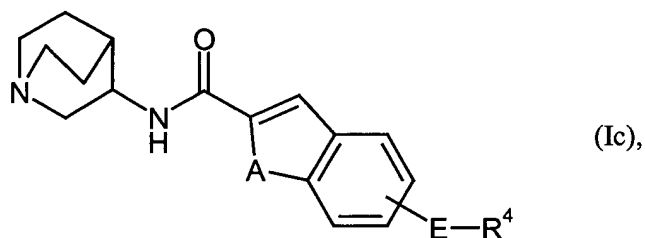
R^2 and R^3 are hydrogen,

R^4 is hydrogen, fluorine, chlorine, bromine, trifluoromethoxy, hydroxymethyl, methoxy or 6-membered heterocyclyl and

R^B is hydrogen, halogen, cyano, trifluoromethyl, trifluoromethoxy or C_1 - C_4 -alkyl,

and the solvates, salts or solvates of the salts of these compounds.

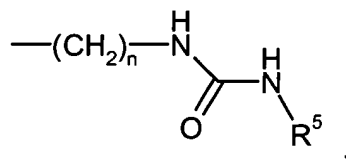
9. (Currently amended) A compound ~~Compounds~~ according to Claims 1 to 8, of the formula



in which

E is phenylene,

R^4 is C_1 - C_6 -alkoxy, aminomethyl, hydroxycarbonyl, C_3 - C_8 -cycloalkylcarbonylamino, a group of the formula



where

R^5 is C_1 - C_6 -alkyl,

n is zero, 1, 2, 3 or 4,

or

5- to 6-membered heterocyclyl which is optionally substituted by oxo,

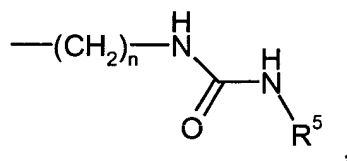
A is sulphur or oxygen,

and the solvates, salts or solvates of the salts thereof.

10. (Currently amended) A compound ~~Compounds~~ according to Claims 1 to 9, of the formula (Ic), in which

E is phenylene,

R⁴ is C₁-C₄-alkoxy, aminomethyl, hydroxycarbonyl, C₃-C₆-cycloalkylcarbonylamino, a group of the formula



where

R⁵ is C₁-C₄-alkyl,

n is zero, 1 or 2,

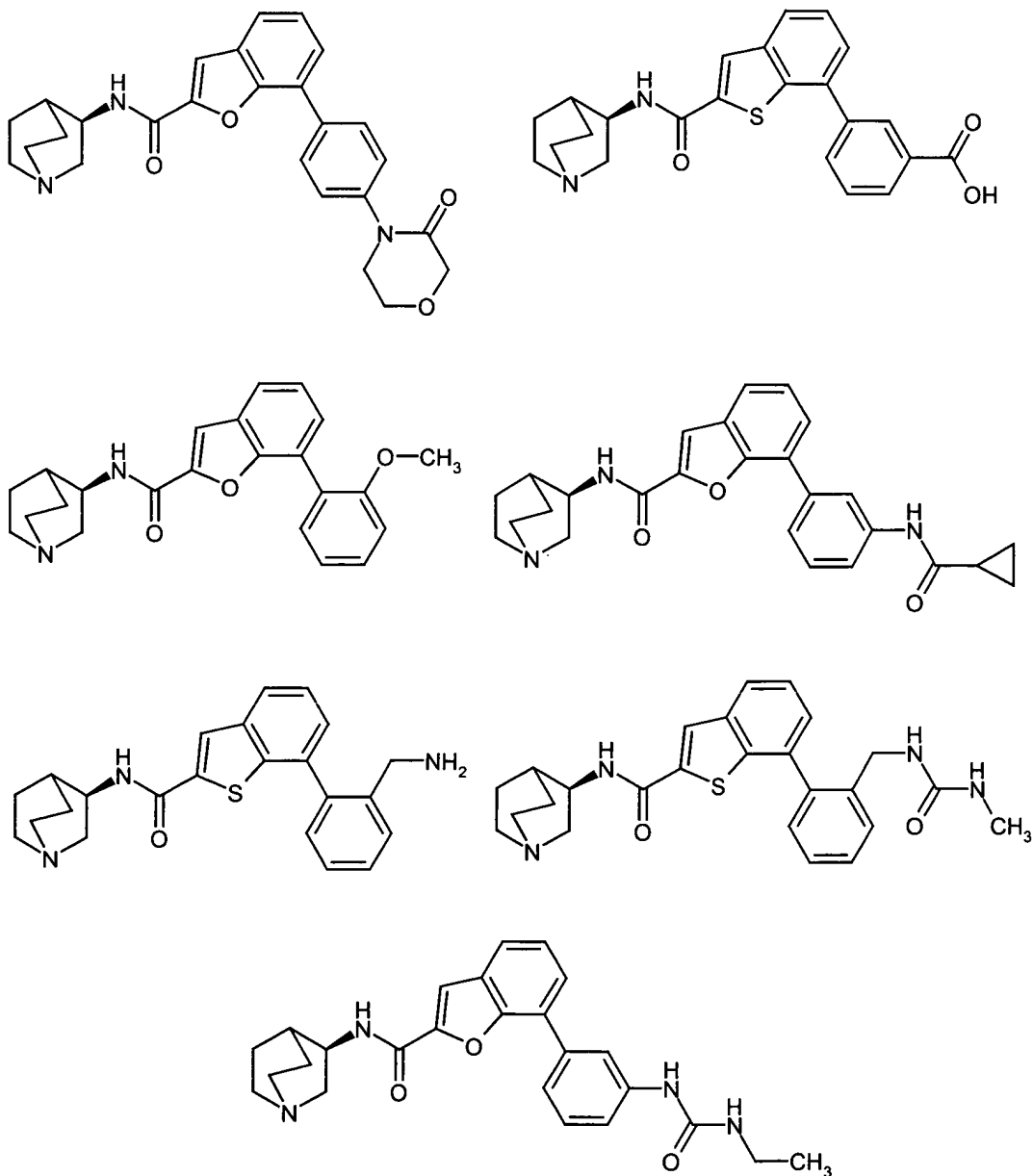
or

5- to 6-membered heterocyclyl which is optionally substituted by oxo,

A is sulphur or oxygen,

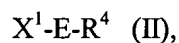
and the solvates, salts or solvates of the salts thereof.

11. (Currently amended) A compound ~~Compounds~~ according to Claims 1 to 10, of the following formulae



and the solvates, salts or solvates of the salts of these compounds.

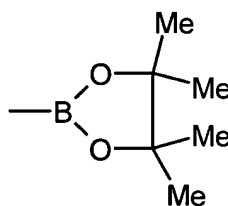
12. (Original) Process for the preparation of the compounds of the formula (I), in which compounds of the formula



in which

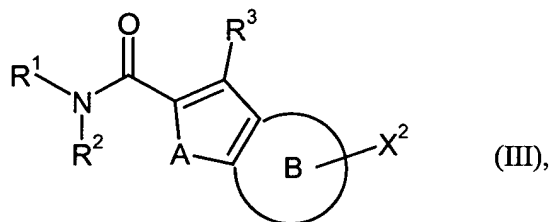
R^4 has the meanings indicated in Claim 1, and

X^1 is $-B(OH)_2$ or



in the case where E is arylene or heteroarylene, and is hydrogen in the case where E is $-C\equiv C-$,

are reacted with a compound of the formula



in which

R^1 , R^2 , R^3 , A and the ring B have the meanings indicated in Claim 1, and

X^2 is triflate or halogen, preferably chlorine, bromine or iodine,

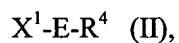
and where appropriate

[A] the resulting compounds (I) are alkylated on the quinuclidine nitrogen atom with appropriate alkylating reagents, or

[B] the resulting compounds (I) are oxidized on the quinuclidine nitrogen atom with suitable oxidizing agents,

and the resulting compounds (I) are converted into their solvates, salts or solvates of the salts where appropriate with the appropriate (i) solvents and/or (ii) bases or acids.

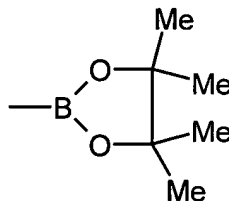
13. (Original) Process for the preparation of the compounds of the invention, in which compounds of the formula



in which

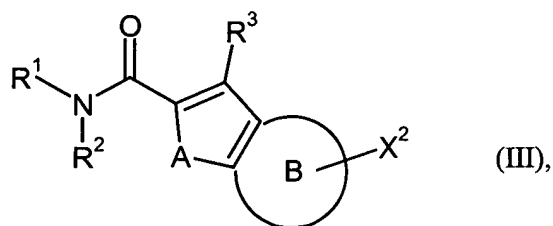
R^4 has the meanings indicated in Claim 1, and

X^1 is $-B(OH)_2$ or



in the case where E is arylene or heteroarylene, and is hydrogen in the case where E is $-C\equiv C-$,

are reacted with a compound of the formula



in which

R^1 , R^2 , R^3 , A and the ring B have the meanings indicated in Claim 1, and

X^2 is triflate or halogen, preferably chlorine, bromine or iodine,

and the resulting compounds (I) are converted into their solvates, salts or solvates of the salts where appropriate with the appropriate (i) solvents and/or (ii) bases or acids.

14. (Cancelled).
15. (Original) Medicament comprising at least one compound according to any of Claims 1 to 11 and at least one pharmaceutically acceptable, essentially nontoxic carrier or excipient.
16. (Currently amended) ~~Use of compounds according to any of Claims 1 to 11 for producing a composition~~ A method for improving perception, concentration, learning and/or memory comprising administering to a subject an effective amount of a compound of Claim 1 or a medicament of Claim 15.
17. (Currently amended) ~~Use of compounds according to any of Claims 1 to 11 for producing a medicament~~ A method for the treatment and/or prophylaxis of impairments of perception, concentration, learning and/or memory comprising administering to a subject an effective amount of a compound of Claim 1.
18. (Currently amended) ~~Medicament according to Claim 15~~ A method for the treatment and/or prophylaxis of impairments of perception, concentration, learning and/or memory comprising administering to a subject an effective amount of a medicament of Claim 15.